

REMARKS

Claims 1-15 constitute all currently pending claims in the application. Claims 6 and 15 are amended.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-5 & 15 stand rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by U.S. Patent No. 6,921,197 to Aubel et al. (“Aubel”). Applicant traverses this rejection for at least the following reasons.

A. Claim 1

Claim 1 requires “detecting an input from the road which acts on a tire tread portion.” Because Aubel’s sensor is provided for measuring temperature, the tire of claim 1 is clearly distinguishable from the teachings of Aubel.

The Examiner asserts that, since the loss of air pressure within the tires can be detected by using the Aubel’s temperature sensor, Aubel’s temperature sensor corresponds to the tire input detection means of the present invention. However, there is a significant distinction between the air pressure within the tire, and the input from the road acting on a tire tread portion.

Furthermore, Aubel’s temperature sensor is, as depicted by Fig. 1, positioned “on the outside of the belt layer in a widthwise direction of the tire and at the same time positioned in the vicinity of the tire shoulder portion.” Accordingly, Aubel’s sensor is not positioned “in a tread rubber on the outside in a radial direction of the belt layer,” as set forth in claim 1 of the present invention. Therefore, if the sensor of claim 1 were to be positioned at the same position as the

sensor of Aubel, the input from the road acting on the tire tread portion would not be detected accurately.

Thus, Aubel fails to teach each and every element of amended claim 1. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of independent claim 1 and its dependent claims 2-5.

B. Claim 15

Claim 15 is amended to independent form. As claim 15 also requires “tire input detection means for detecting an input from the road which acts on a tire tread portion, which are buried in a tread rubber on the outer side in the radial direction of a tire belt layer,” claim 15 is also patentable over Aubel for reasons analogous to those presented above, with respect to claim 1.

The Examiner cites Aubel at col. 2, lines 5-17. This portion of Aubel states that the “output signal of the temperature sensor is evaluated in the evaluation unit with regard to its magnitude and/or its trend with respect to time.” In contrast, claim 15 requires “monitoring the ratio of tire input detection values.” Thus, claim 15 monitors a ratio of at least two tire input detection values, while Aubel does not appear to describe any ratio whatsoever. Although Aubel appears to describe evaluating an integral of the output signal over time, this cannot be construed as referring to a “ratio” of values from “at least two tire input detection means.”

Furthermore, claim 15 requires “estimating that the unsymmetrical wear of the tire proceeds when the ratio exceeds a preset threshold value for a predetermined time or longer.” Although the cited portion of Aubel states that “a wear signal can be indicated if the value of the integral exceeds a predetermined threshold value,” it fails to disclose that the wear of the tire is

“unsymmetrical,” or that a “ratio exceeds a preset threshold value for a predetermined time or longer.” This portion of Aubel, therefore, fails to contemplate comparing any ratio with a preset threshold value, or a predetermined time.

The Examiner also refers to col. 6, lines 60 – col. 7, line 1 of Aubel. This portion of Aubel appears to describe an alternative embodiment, in which “the temperature sensor can be eliminated and only a storage unit that is preprogrammed at manufacture and is attached to the tire need be provided.” Thus, this embodiment fails to include any sensor which could be construed as the tire input detection means of claim 15. Regarding the condition of wear, this portion of Aubel also fails to disclose that the wear is “unsymmetrical” and merely appears to describe that “a storage unit” includes “storage values” which may possibly include “the condition of wear.” Thus, this portion of Aubel fails to disclose a tire input detection means as required by amended claim 15, and fails to disclose “estimating that the unsymmetrical wear of the tire proceeds.” Finally, the Examiner cites col. 9, lines 15-28, which merely discloses matter already addressed above.

Thus, the cited portions of Aubel fail to teach each and every element of amended claim 15. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of amended claim 15.

Claim Rejections Under 35 U.S.C. § 103

Claim 6 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Aubel in view of U.S. Patent No. 5,749,984 to Frey et al. (“Frey”). Applicant traverses this rejection for at least the following reasons.

Amended claim 6 requires “detecting the contact lengths of at least two locations of a tire tread portion,” and “estimating the conditions of a running tire based on the detected contact lengths.” The Examiner acknowledges that Aubel “does not teach detection of the contact lengths of at least two locations of a tire tread portion.” However, The Examiner refers to Figs. 1a, 3, and 4, of Frey as allegedly teaching this element of claim 6.

First, Fig. 1a appears to show a “contact length CL,” but fails to show more than one contact length. Figs. 3 and 4 appear to show analysis of signal output from a single sensor, which allows a determination of a single contact length. Frey at col. 5, lines 60 – col. 6, line 65, also cited by the Examiner, states that “[t]he first and second deformations of the sensor device as the reference point enters and exits the contact patch defines very well the contact length CL (Fig. 1a).” (emphasis added.) Thus, although Frey shows two “deformations” of a single “sensor device,” nowhere does Frey appear to teach or suggest detecting more than one contact length CL.

In other words, what is sought to be detected in Frey are the two peak values which appear at an in patch and out patch, respectively, of the tread block. Thus, Frey does not teach the contact lengths of at least two locations as taught by the present invention, as a contact length would have to be obtained from the spacing between the above two peaks and the wheel speed. Frey, therefore, fails to teach “detecting the contact lengths of at least two locations of a tire tread portion” or “estimating the conditions of a running tire based on the detected contact lengths.”

Thus, Aubel and Frey, alone or in combination, fail to teach or suggest each and every element of amended claim 6. Accordingly, Applicant respectfully requests that the Examiner withdraw the rejection of claim 6.

Allowable Subject Matter

Claims 7-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant respectfully holds in abeyance the rewriting of these claims, pending resolution of issues regarding their parent claims.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant herewith petitions the Director of the USPTO to extend the time for reply to the above-identified Office Action for an appropriate length of time if necessary. Unless a check is attached, any fee due under 37 U.S.C. § 1.17(a) is being paid via the USPTO Electronic Filing System (EFS). The USPTO is also directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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